4

BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

IN THIS NUMBER

The Budget as a Medium of Executive Leadership
JOHN H. WILLIAMS

A Method of Evaluating Clerical Jobs and Employes
R. C. NYMAN

Professor Henri Le Chatlier on Frederick W. Taylor

Reviews

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Engineering Societies Building
29 W. Thirty-Ninth St.
New York

AUGUST, 1928 VOL. XIII, NO. 4

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The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure—for the common benefit of the community, the worker, the manager and the employer—understanding and intelligent direction of the principles of administration and management which govern organized effort for accomplishing industrial and other social purposes.

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptation and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective responsibility.

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AUG 24 1928

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TAYLOR SOCIETY
AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Published by the Taylor Society Incorporated at
Engineering Societies Building
29 West Thirty-Ninth St., New York
Cable address: Taysoc

The BULLETIN OF THE TAYLOR SOCIETY is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

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Published every other month. Per year to Members $2.50; to others $3.00. This issue $.50.
Entered as second-class matter, Dec. 17, 1921, at the Post Office at New York, N.Y under the Act of March 3, 1879.

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The demand from public and industrial libraries for back issues of the BULLETIN to complete sets is constantly increasing while our ability to meet the demand is decreasing as more and more issues are exhausted. Readers who do not bind their BULLETINS can be sure of their being widely used if they will return them to the Society office. Fifty cents each will be paid for the following especially needed numbers. There is a particularly urgent demand for the two numbers printed in bold face type. Vol. 1, No. 6 (1915), **Vol. V, No. 6 (1920)**, Vol. XI, Nos. 1, 2, and 3 (1926), **Vol. XII, No. 4 (1927).**

This vacation-month issue of the Bulletin contains one third the standard number of pages, a reduction for which there was advance compensation by extra pages in preceding issues.

Comment

IN THE report of the proceedings of the International Relations Association Congress — see page 169—a distinction is made between mass production and scientific management, which we are glad to note. We are reminded by contrast of the common failure to distinguish between certain terms which now have vogue—mechanization, mass production, rationalization and scientific management.

SCIENTIFIC MANAGEMENT is not identical with any of the other three. It may or may not coincide with any of them, but it is something different. It had its origin in small sized plants manufacturing various products on multiple purpose machines involving manipulation and adjustment where variability and chance are present; and its basic principles are three: research and experiment to discover and separate basic and constant from superficial and variable factors; the establishment and maintenance of these as standard for planning and direction of execution; and a system of control of execution in terms of these standards, with resultant increase in the results of cooperative effort.

MECHANIZATION connotes primarily the transference of skill to mechanical equipment—labor relieving machinery. It has relation to volume of production, and in general the larger the plant the greater the mechanization. *Mass production* identifies what the term indicates—quantity output; and it is made possible on the one hand by markets which give a constant large volume of orders, and on the other hand by the facilities of mechanization. Mass selling, mass production and mechanization are Siamese triplets. *Rationalization*—a postwar German concept—was suggested by the European cartel. It connotes a "rational" harmonizing of the operations of entire industries, usually directed or at least sympathetically promoted by government, for the purpose of furthering national industrial welfare. It finds it expedient to utilize mechanization, mass production and scientific management in that endeavor. Perhaps the beginning of rationalization in the United States is the work of the Division of Simplified Commercial Practice of the Department of Commerce.

The Budget as a Medium of Executive Leadership[1]

The Budget Properly Handled Furnishes a Means of Combining Instruction and Inspiration for Creative Activity Which Is Unique

By **JOHN H. WILLIAMS**
Consulting Engineer, New York

A TIME study and budget represent different aspects of the same thing, an estimate. When Frederick W. Taylor first advocated the use of time study in setting bonuses and in planning and routing work in the factory, most of the people who heard him and *understood* him said his plans involved too much detail and added too much to overhead costs; that they were beautiful in theory but impracticable. The people who heard him and *did not understand* said, "Fine!" and immediately proceeded to apply the term time study to the same old averages of performance and guess work estimates they had previously used.

The difference between a time study and an ordinary estimate of time is that time study uses the job analysis, that is, breaks the job into its component parts and studies each of them separately. It also studies the conditions and methods of work in their inter-relation. Standards are set with reference to prescribed conditions. The same difference exists between a popular and a scientific budget with the added confusion, in the case of the budget, of calling both by the same name. As a preliminary to what I shall say with reference to the budget as a medium of executive leadership, I shall first review briefly the present general practice in the use of budgets and, second, suggest certain refinements which add very much to flexibility.

Present General Practice in the Use of Budgets

Budgets differ from estimates and forecasts principally in form. They are used in industry primarily in making appropriations, in determining policies and in controlling expenditures.

In the case of budgets used in making appropriations, where there is a prescribed sum of money for certain general purposes which must be expended under different responsibilities, the person in charge of each responsibility is required to make a separate budget. These budgets are then considered in the light of the relative importance of the different responsibilities. After being revised so as to bring the proposed expenditures in relation to the relative importance of the different responsibilities, the budgets are used for control of expenditures.

In determining policies the budget may be used, for example, to compare the cost of distribution, say of milk or bread, by horse drawn wagons and by automobiles, and possibly by post or through an outside delivery agency; to determine the relative desirability of putting more salesmen on the road or of increasing sales by direct mail and periodical advertising; to determine the desirability of producing something now being bought from outside manufacturers. In the case of all such budgets, certain factors, such as the amount of sales to be expected under different conditions, must be assumed, but budgets are usually made to show what can be expected under minimum as well as reasonable expectations.

Budgets for the purpose of controlling expenditures are usually more detailed than those for other purposes. The items preferably are grouped according to the accounting classification to which they will be charged. The persons in a position to effect economies in the different items usually participate in making the figures for the budget. The principal difficulty with budgets for this purpose is that general economic conditions, styles, good or bad weather, etc., may so change the conditions upon which the budget is predicated that by the time actual expenditures are available for comparison the budget is more or less useless.

The questions most often asked with reference to budgets are: What sales quota should be used in making a budget and how can one compare

---

[1] Paper presented in New York, January 12, 1928, as part of a course of lectures on "Leadership." The course is under the direction of Dr. H. C. Metcalf, Bureau of Personnel Administration, 420 Lexington Avenue, New York, and will later be available in printed form.

budget and actual figures where circumstances have materially changed since the budget was made? The conventional answer to these questions is that you must of course base your budget upon whatever sales you feel reasonably assured of making, and that you must refigure your budget whenever conditions change from those upon which the budget was based.

A Flexible Budget

Working out more satisfactory answers to the foregoing questions has led to some interesting developments in the use and effectiveness of budgets. These questions both resolve themselves into the necessity for a budget which is applicable to different and changing conditions. This necessity has been met by making the original budget in *items, or we might say factors, rather than in totals* and by not *computing* a budget which is to be compared with actual figures until volume of sales and all other conditions are known.

Roughly speaking, we make our budget in terms of tons, yards, or some other unit of measurement, but always in terms of two elements: (1) fixed cost, that part of cost which remains constant irrespective of fluctuations from the smallest probable volume of business to the largest practicable capacity of the business, and (2) variable cost, that part of cost which should vary in proportion to the volume of business done.

As a practical illustration, suppose you want to include in your budget the cost of paper and printing for a one page circular but do not know how many circulars you may use. You might get an estimate from your printer of so much for the first thousand, say fifteen dollars, and so much for each additional thousand, say five dollars. Deducting five dollars representing the cost of an additional thousand circulars from the fifteen dollars representing the cost of the first thousand, we get ten dollars as the "fixed" cost and five dollars per thousand as the "variable" cost. Following this general procedure it is possible to determine a fixed and a variable cost and a practical unit for computing each item of the budget. When this has been done, it will readily be seen how both the advantage of making the budget in advance of the expenditures, yet computing it on the same basis as the expenditures, may be achieved at one and the same time.

In practice we have found it necessary to create one formula for determining the "fixed" and "variable" cost for *all* items used in the same budget, otherwise it is impossible to prove the work. Following is a copy of a formula I worked out for this purpose in 1921 in connection with a very interesting situation.

METHOD FOR DETERMINING BUDGET FIGURES FOR ITEMS WHICH DIFFER IN VARYING PROPORTIONS ACCORDING TO THE BUSINESS DONE

FORMULA

Determine largest and smallest probable volume of business (expressed in dollars) and the cost of the item in question, for each such volume.

Per cent Variable Cost—Difference between largest and smallest cost, divided by difference between largest and smallest volume of business.

Fixed Cost—Either largest or smallest volume, less variable cost for whichever volume is used.

EXAMPLE

	Volume of Business	Cost	Per Cent Variable Cost
Largest	$400,000	$900	
Smallest	200,000	700	
	$200,000	$200	
		$200,000	.001

The .001 represents the relation of the variation in *cost* to the variation in *volume* or the *per cent variable cost.*

Total Cost on Sales of $400,000	$900.
Variable Cost (.001) on Sales of $400,000	400.
Fixed Cost	$500.
or	
Total Cost on Sales of $200,000	$700.
Variable Cost (.001) on Sales of $200,000	200.
Fixed Cost	$500.

APPLICATION

Question—If the volume of business is $300,000 what would the budget figures for the item in question be?

Answer—One tenth of one per cent of the volume (300,000 x .001=$300) as representing the *variable cost* plus $500, as representing the *fixed cost,* or $800 *in all.*

There were a great many concerns in difficulties about that time. Some of them were actually losing money. The question was constantly put to me as to what would or could these concerns make when business returned to normal. Through the application of the above formula, using the best year they had ever had as representing a maximum and the poorest year they had ever had, which in most cases was the current one, as representing a minimum, we were able to make a list of budget items in terms of fixed and variable cost from which we were able to compute prospective profits and losses on different volumes of business and even at different commodity and labor costs.

It is impossible in one evening's talk to describe fully the making of a flexible budget but I refer those who are interested to the BULLETIN OF THE TAYLOR SOCIETY of April, 1922, in which, under the title "A Technique for the Chief Executive," I give the only exposition of the flexible budget that so far as I know has ever been printed.

The Budget as a Medium of Executive Leadership

The greatest difficulty of leadership is to impart information without creating antagonism, which leads to an effort to find other ways of doing the thing rather than to understand the explanation.

Up to a certain age, which is about the time of finishing one's education, most people are more easily taught than afterwards. The time when the change takes places varies. Psychologists explain that it is natural to take pride in learning so long as one is frankly a pupil, and that it is equally natural that when the pursuit of knowledge is over one should resent being given too much information. It is interpreted to imply a lack of knowledge and is resented as depriving one of the privilege of working out the problem in one's own way.

The budget properly handled furnishes a means of combining instruction and inspiration of creative activity which is unique. To obtain the full benefit, responsibility and credit for effective work and economy should always be given to the person in a position to effect such economies. The job of the man higher up should be to help and support those responsible for effecting economies to exercise their own authority but not to make decisions for them.

It is here that the budget comes in. Suppose the cost of a department, whether it be in an office or factory, has unduly increased or the quality of its work is unsatisfactory. The conventional procedure is for the executive in charge to send for the department head and show him the faults of his department. The department head has probably passed the period when his pride is in learning, and however considerate the executive may be, the focusing of attention on faults will be regarded as criticism. If the department has been budgeted a different situation exists.

The mere existence of a budget, which it is the duty of the executive to enforce, relieves him of the personal equation. With the budget in hand, he may send for the department head. In place of his pointing out the unsatisfactory results achieved and what could or should have been done to prevent them, they go over the budget together to see what can be done to bring about the desired results. This avoids the necessity for finding fault. The executive should remember that if a department head does not deserve this kind of treatment the best thing he can do is to fire him, and put in his time on a more competent man.

You may wonder why all this cannot be done without a budget. The budget, whether flexible or not, takes unto itself the onus of the situation and puts the executive more nearly on a level with the department head. It puts them in a position of having a common purpose. This is more stimulating to the department head than you can imagine unless you have recently been a department head and have had this experience. Also, the existence of the budget as a medium of expression of results achieved objectifies the conversation. There will be encouraging progress if the executive will avoid preaching and interest himself in developing the other man's ideas rather than in exploiting his own.

The situation should be developed through questions as to what it should cost under this or that condition to achieve certain maximum and minimum results. Here comes the point of the flexible budget. You show the department head how, with this information, he can work out his fixed and variable costs and measure his accomplishments, under the exact conditions which prevail, in terms of weeks or months at will. What is even more important, instead of telling him, you have caused him to analyze the situation and to find out for himself what can and should be done.

You may say it would be easier to do the work yourself, but I want to suggest that this kind of thing is the essence of leadership and that without this sort of patience and ability, one had best stay in the class of doers. There are three stages in the development of leadership. First, learning; second, doing; and third, leading. The trouble is that people in the second stage want the prestige of leadership without giving up the kick of doing.

In closing I want to illustrate the flexible feature of a budget and tell a story which will give you a better idea of how the making or revision of a budget may be used as an educational medium.

Costs as such do not serve the ends of management. They occur after the fact. What is needed is something that one may read as he runs. Suppose that you had to motor to Tarrytown within an hour (a distance of say thirty miles) on a road that you knew but with no land marks to indicate your progress. A watch would tell you if you got there in the hour but it would not help you to determine your progress while there was still time to affect it. If when the hour was up, you had not reached Tarrytown you would be in the same position as the executive who does not know that his costs are too high, until the job is done. But if you had a speedometer, the moment your speed slackened to less than thirty miles an hour, even though it were in the first mile, you would know you must make up this lost time if you were to get to Tarrytown in the hour. The flexible budget is to management what the speedometer is to the motorist.

There is no one thing which to my mind is so important or helpful in the carrying out of an undertaking as the necessity for predetermination. It forces you to look before you leap. It obviates finding yourself suspended in mid-air without having decided where to land. Predetermination is sometimes difficult and irksome but it is fundamental to all scientific procedure. You may ask how one is to determine things which are in their very nature dependent upon other determinations not yet made. I will tell you an experience which will, I think, answer this question satisfactorily.

In making a budget for a concern which sent out a great deal of printed matter, the head of the Forwarding Department said it was impossible to make a budget for his department without knowing what he would be required to ship. Without telling him how to make his budget I asked him a number of questions which brought out the following facts:

1. The amount of money which had been budgeted for the printed matter.
2. The average weight of such literature per hundred dollars.
3. The average distance of the places to which the material was to be delivered.
4. The cost per ton for transportation over the average distance.
5. The average size of the paper wrapped packages, the average size of the box used, the number of average packages per ton, the number of average boxes per ton, the cost of paper, cord, and wrapping the average package and the cost of the box and packing the average box.

With these determinations, I do not have to tell you how he arrived at his budget. These budget items, as applied to the actual shipments made, came within $1000 of the total cost of something over $100,000, and the total cost was very considerably less than it had been the previous year for sending out a similar amount of material.

International Industrial Relations Association Congress Cambridge, England—June, 1928

THAT mass production is insecure for both labor and capital because of its dependence on wide markets, and that social research and scientific management under the joint auspices of labor and employers are needed to give stability to industry and to protect wage earners against those effects of mechanization which are detrimental, was pointed out by speakers from the United States, Great Britain, Germany and other countries at the Congress of the International Industrial Relations Association (for the study and improvement of satisfactory human relations and conditions in industry). The Association recently completed a five days' discussion of the subject, "Fundamental Human Relationships in Industry," at Cambridge, England. The Congress was attended by personnel managers and welfare workers, employers, representatives of labor, factory inspectors and research workers from twenty countries and was addressed by many noted speakers.

The officers elected for the ensuing three years were President, C. H. van der Leeuw, Partner, Messrs. de erven de wed. J. van Nelle, Holland; Vice-Presidents, Miss Mary van Kleeck, Russell Sage Foundation, New York, Miss M. L. Fledderus, Holland, and Erich Lubbe, Chairman of the Works Council (employes), Siemens, Ltd., Berlin; Treasurer, Charles E. Jacob, Managing Director, Messrs. W. and R. Jacob and Company, Ltd., of Dublin, Ireland.

A Method of Evaluating Clerical Jobs and Employes[1]

Designed to Serve as a Basis for More Scientific Control of Office Problems and More Intelligent Placement of Office Workers

By **R. C. NYMAN**
Davison-Paxon Co., Atlanta, Ga.

THE NUMBER of clerical workers in the industries of this country has increased seventeen fold in the last fifty years, while the population has little more than doubled.[2] With this tremendous increase have come economic wastes and human injustices that are at last calling the attention of major executives to office problems. The principles of scientific management that were first applied in the plant only are now being utilized in office management as well.

A method of analyzing, rating and classifying clerical jobs and employes that has been found to be effective and easy to carry out is briefly described here and the forms used for securing and utilizing the necessary information are reproduced.

The form represented in Figure 1 is used to secure the necessary information for analyzing jobs. This can be submitted directly to the clerks for filling out and later checked by the job analyst with the department head or chief clerk to be sure that replies are complete and authentic. Care should be taken that a job is not over or under estimated.

The form shown in Figure 2 has been used to prepare the analysis from which the job rating and classification are determined. Variations in the form may of course be advisable to fit special cases. It provides for entering the job title; the department and section in which the job is done; the person to whom the employe reports—of value in determining the relative importance of the job; the points of contact, and the actual duties of the job. Transitive verbs should be used in enumerating the duties of the job in order to insure a description of the action performed. The form also provides for listing the minimum qualifications that a person must have in order to be placed on the job at all. These should be drawn up by the job analyst from the rest of the material on the form, but no attempt should be made to establish standard requirements for the job at this time. This is done more accurately from the job ratings than from the information so far available.

After the analyses are completed the form illustrated by Figure 3 is used for rating each job and setting up standard requirements for it. Certain factors enter into every job, such as skill, intelligence, etc., and certain elements enter into each one of these factors, such as, manual, numerical and verbal skill. By using standard definitions of these factors and elements, together with the job analysis sheets, it is possible to check on this form the relative importance of each factor and each element in any job. Care should be taken to set up standard requirements without any consideration of the person or persons already performing the work. The rating of persons comes after the jobs have been rated, classified and bases of pay established.

After the job ratings have been completed by the job analyst they should be submitted to the department head for his comments. The ratings and comments of the department head should then be brought before a committee of executives thoroughly familiar with the office operations. This committee should finally determine the "standard" requirements for each job.

These then serve as a basis for placing each job in one of four classes.

Class I includes minor executive jobs, specialist jobs, jobs requiring technical knowledge, initiative, trade knowledge, imagination—all jobs that have a high market value.

Class II includes semiroutine jobs requiring some initiative, special training, experience over a long period, or a high degree of skill. These are jobs of a more or less confidential nature that are not easily filled from the rank and file of applicants or members of the organization.

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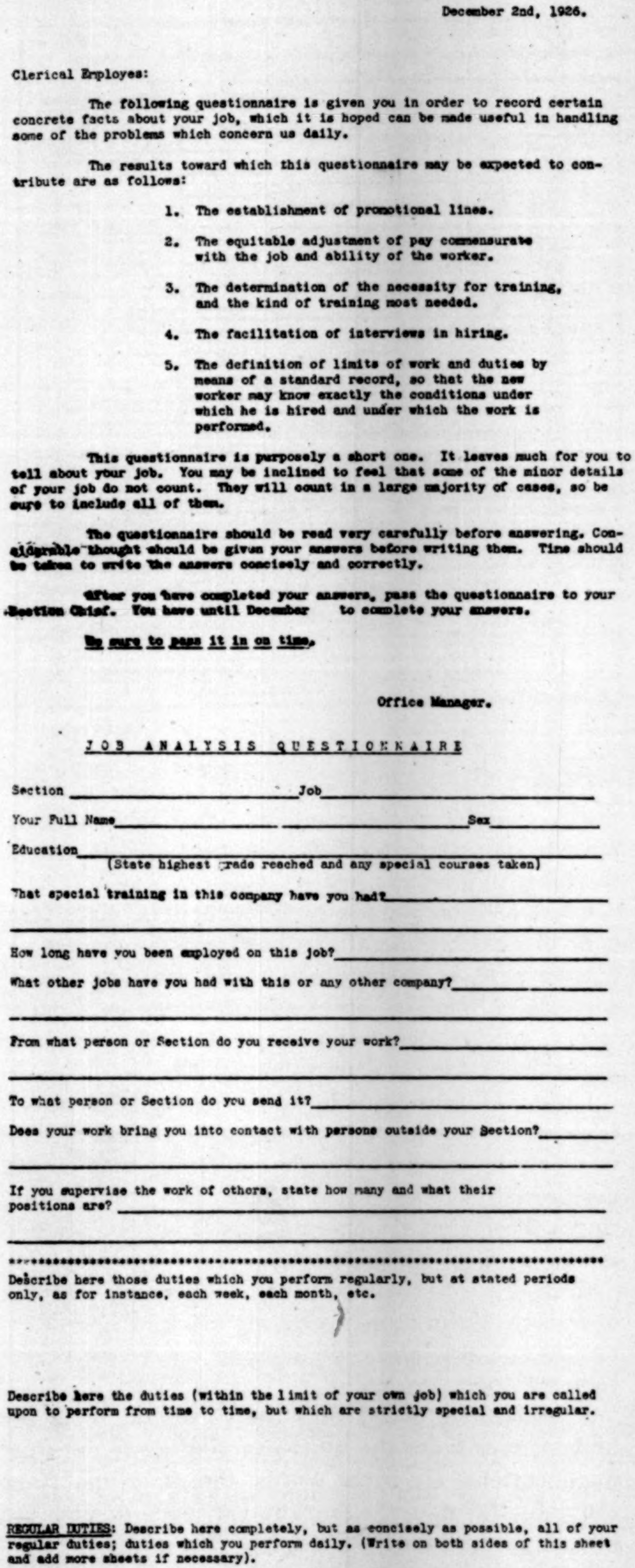
[1] Developed by the author from methods used at the Dennison Manufacuring Company, Framingham, Mass.

[2] Leffingwell, W. H., "The Present State of the Art of Office Management," *Bulletin of the Taylor Society,* Vol. X, No. 2, April, 1925.



December 2nd, 1926.

Clerical Employes:

The following questionnaire is given you in order to record certain concrete facts about your job, which it is hoped can be made useful in handling some of the problems which concern us daily.

The results toward which this questionnaire may be expected to contribute are as follows:

1. The establishment of promotional lines.
2. The equitable adjustment of pay commensurate with the job and ability of the worker.
3. The determination of the necessity for training, and the kind of training most needed.
4. The facilitation of interviews in hiring.
5. The definition of limits of work and duties by means of a standard record, so that the new worker may know exactly the conditions under which he is hired and under which the work is performed.

This questionnaire is purposely a short one. It leaves much for you to tell about your job. You may be inclined to feel that some of the minor details of your job do not count. They will count in a large majority of cases, so be sure to include all of them.

The questionnaire should be read very carefully before answering. Considerable thought should be given your answers before writing them. Time should be taken to write the answers concisely and correctly.

After you have completed your answers, pass the questionnaire to your Section Chief. You have until December to complete your answers.

Be sure to pass it in on time.

Office Manager.

JOB ANALYSIS QUESTIONNAIRE

Section ______________________ Job ______________________

Your Full Name ______________________ ______________________ Sex __________

Education ____
(State highest grade reached and any special courses taken)

What special training in this company have you had? ______________________

____

How long have you been employed on this job? ______________________

What other jobs have you had with this or any other company? ______________________

____

From what person or Section do you receive your work? ______________________

____

To what person or Section do you send it? ______________________

Does your work bring you into contact with persons outside your Section? __________

____

If you supervise the work of others, state how many and what their positions are? ______________________

____

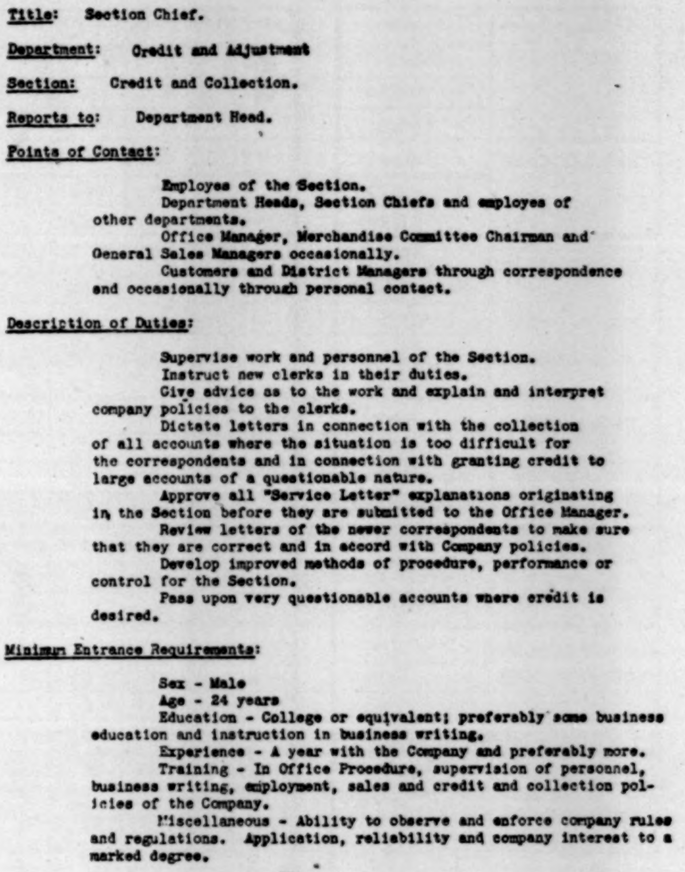
* * *

Describe here those duties which you perform regularly, but at stated periods only, as for instance, each week, each month, etc.

Describe here the duties (within the limit of your own job) which you are called upon to perform from time to time, but which are strictly special and irregular.

REGULAR DUTIES: Describe here completely, but as concisely as possible, all of your regular duties; duties which you perform daily. (Write on both sides of this sheet and add more sheets if necessary).

Figure 1



Title: Section Chief.

Department: Credit and Adjustment

Section: Credit and Collection.

Reports to: Department Head.

Points of Contact:

Employes of the Section.
Department Heads, Section Chiefs and employes of other departments.
Office Manager, Merchandise Committee Chairman and General Sales Managers occasionally.
Customers and District Managers through correspondence and occasionally through personal contact.

Description of Duties:

Supervise work and personnel of the Section.
Instruct new clerks in their duties.
Give advice as to the work and explain and interpret company policies to the clerks.
Dictate letters in connection with the collection of all accounts where the situation is too difficult for the correspondents and in connection with granting credit to large accounts of a questionable nature.
Approve all "Service Letter" explanations originating in the Section before they are submitted to the Office Manager.
Review letters of the newer correspondents to make sure that they are correct and in accord with Company policies.
Develop improved methods of procedure, performance or control for the Section.
Pass upon very questionable accounts where credit is desired.

Minimum Entrance Requirements:

Sex - Male
Age - 24 years
Education - College or equivalent; preferably some business education and instruction in business writing.
Experience - A year with the Company and preferably more.
Training - In Office Procedure, supervision of personnel, business writing, employment, sales and credit and collection policies of the Company.
Miscellaneous - Ability to observe and enforce company rules and regulations. Application, reliability and company interest to a marked degree.

Figure 2

Class III includes strictly routine jobs requiring but limited education and a short training to produce proficient work. These are jobs easily filled from the ranks or from the ordinary run of applicants.

Class IV includes measured production jobs, or those to which differential piece or hourly rates of payment may be applied successfully.

The rating of jobs and employes is done by giving a point value to various degrees of each factor and element in the job. The rating sheet provides for a possible score of seventy-six points. To place each job in its proper class this total number of points is divided into three parts. Jobs rating from one to twenty-four points are placed in Class III; those rating from twenty-five to thirty-nine points are placed in Class II; and those rating over forty points are placed in Class I. Since Class IV jobs all involve ability to use a special type of apparatus and are capable of objective measurement, they are considered as exceptions. The ratings of these jobs can be used, together with time study, to set differential piece or hourly rates of payment for the various jobs.

SKILL	KIND	NONE	SLIGHT	AVE	MORE THAN ORD.	EXCEPT.
	MANUAL	●				
	NUMERICAL	●				
	VERBAL					●
INTELLIGENCE	KIND	NONE	ROUTINE	TRADE JUDG.	SUP. JUDG.	MGR. JUDG.
	TECHNICAL				●	
	PRACTICAL				●	
PERSONALITY	KIND	NONE	LITTLE	ORD	MORE THAN ORD.	EXCEPT.
	APPLICATION-RELIABILITY-COMPANY INTEREST.				●	
	TACT				●	
	FORCE				●	
	ABILITY TO TEACH OR SUPERVISE				●	
TRAINING	KIND	NONE	LIMITED	GOOD	MORE THAN ORD.	EXCEPT.
	TRADE TRAINING				●	
	GEN'L EDUCATION				●	
	EXPERIENCE				●	
REPLACEMENT COST	VALUE	NONE	$10-19	$20-29	$30-39	$40-
	MARKET PRICE					●
	PRICE PERSON REQUIRED					●
OPPORTUNITY FOR PROGRESS	POSSIBILITIES	NONE	LIMITED	FAIR	GOOD	EXCEPT.
	WITH COMPANY				●	
	ELSEWHERE				●	
	TRANSFER POSSIBILITIES				●	
COMPANY TRAINING COST	COST	NONE	SMALL	ORD.	MORE THAN ORD.	CONSIDERABLE
	LENGTH OF TIME				●	
	TRAINING LOSS	●				
	POINT VALUE OF RATING	0	1	2	3	4

Figure 3

CLERICAL JOB RATING
Department—General Correspondence
Position—Section Chief, Adjustment Section
Job Rating Score—51 points

Figure 4 shows how the various jobs fall into the three classes on the basis of their point ratings.

While rates of pay may vary according to the policy of the company, the locality of the company and the prevailing wage rates, a fairly definite scale can be set up.

Class I jobs are paid $40 a week and upward. Vacations with pay and compensation for illness are included.

Class II jobs are paid from $25 to $39 per week. Vacations with pay and compensation for illness are also included here.

Class III jobs are paid by the hour and do not receive compensation for vacations or illness. The weekly rate ranges from $12.50 to $24.

Class IV jobs are on a measured production basis and do not receive compensation for vacations or illness. The weekly rates range from $12.50 to $40.

The following listing of jobs according to class gives an idea of the way in which individual jobs line up:

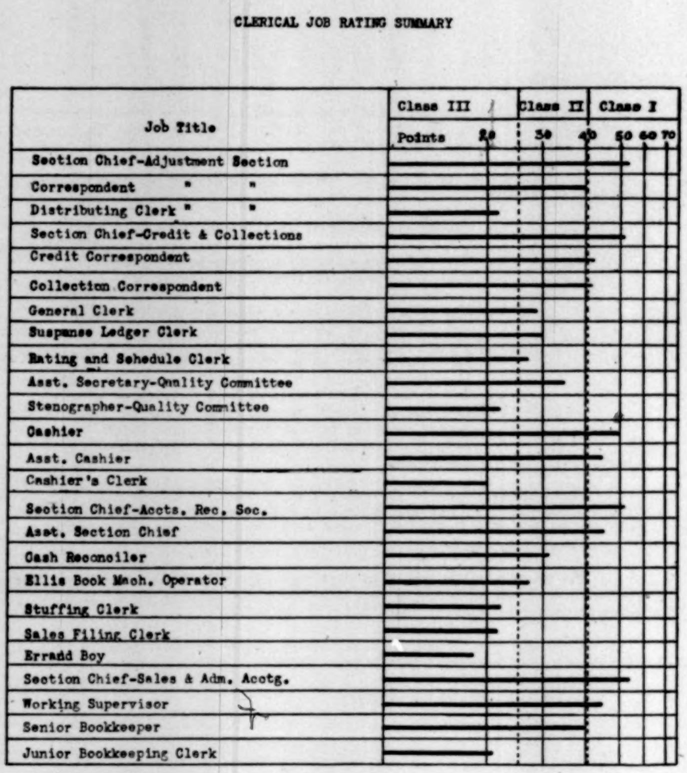


Figure 4

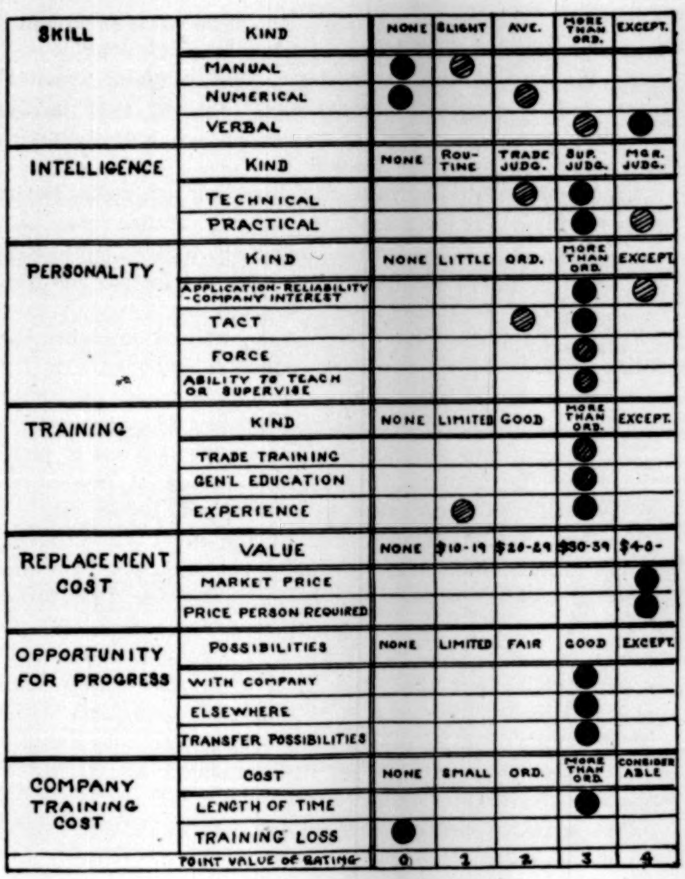
Class I jobs include accountants, cashiers, assistant cashiers, correspondents, cost accountants, statisticians, section chiefs, assistant section chiefs, working supervisors, etc.

Class II jobs include cash reconcilers, classifiers, control clerks, general clerks (some departments), master card operators, rating and schedule clerks, secretaries, senior bookkeepers, suspense ledger clerks, tracers, telegraph message clerks, working supervisors (some departments), etc.

Class III jobs include addressograph operators, junior bookkeeping clerks, cashier's clerks, distributing clerks, errand boys, general clerks, mail clerks, multigraph clerks (also Class IV), numbering clerks, filing clerks, stenographers (routine), stuffing clerks, typists, checkers, etc.

Class IV jobs include Ellis bookkeeping machine operators, Moon Hopkins billing machine operators, multigraph operators, dictaphone operators, comptometer operators, etc.

It should be noted that the jobs that have the highest rating are the most exacting as to personal qualifications. In other words, the more important the job, the more important the person, and the less important the job, the less important the person. It is upon personal factors that a high market value is placed.



SKILL	KIND	NONE	SLIGHT	AVE.	MORE THAN ORD.	EXCEPT.
	MANUAL	●	◍			
	NUMERICAL	●		◍		
	VERBAL				◍	●
INTELLIGENCE	KIND	NONE	ROUTINE	TRADE JUDG.	SUP. JUDG.	MGR. JUDG.
	TECHNICAL			◍	●	
	PRACTICAL				●	◍
PERSONALITY	KIND	NONE	LITTLE	ORD.	MORE THAN ORD.	EXCEPT.
	APPLICATION-RELIABILITY-COMPANY INTEREST				●	◍
	TACT			◍	●	
	FORCE				◉	
	ABILITY TO TEACH OR SUPERVISE				◉	
TRAINING	KIND	NONE	LIMITED	GOOD	MORE THAN ORD.	EXCEPT.
	TRADE TRAINING				◉	
	GEN'L EDUCATION				◉	
	EXPERIENCE		◍		●	
REPLACEMENT COST	VALUE	NONE	$10-19	$20-29	$30-39	$40-
	MARKET PRICE					●
	PRICE PERSON REQUIRED					●
OPPORTUNITY FOR PROGRESS	POSSIBILITIES	NONE	LIMITED	FAIR	GOOD	EXCEPT.
	WITH COMPANY				●	
	ELSEWHERE				●	
	TRANSFER POSSIBILITIES				●	
COMPANY TRAINING COST	COST	NONE	SMALL	ORD.	MORE THAN ORD.	CONSIDERABLE
	LENGTH OF TIME				●	
	TRAINING LOSS	●				
	POINT VALUE OF RATING	0	1	2	3	4

Figure 5

COMPARISON CLERICAL JOB AND EMPLOYE RATINGS
Department—General Correspondence
Position—Section Chief, Adjustment Section
Employe Rating Score—31 points
Comparison Rating—31 points

When the job ratings and classification have been completed, the employes are rated by the same method. Figure 5 shows how the comparison is made between job and employe. As in Figure 3, the solid circles represent job ratings. The lined circles represent employe ratings. Where a lined circle is surrounded by a heavy outline, it means that the job and employe ratings correspond. The comparison rating, which the employe rating should equal, is arrived at by subtracting from the total job rating the rating points which apply only to the job.

When a sheet similar to Figure 5 has been prepared for each job and employe, the sheets are brought before the committee that was responsible for determining the standard job requirements. When the comparative ratings have been gone over, definite recommendations should be submitted to the office manager on the basis of them. In some cases transfers may be necessary, adjustments in wage, and additional training for the job. Corrective measures and adjustments made possible by this method result in increased production and greater satisfaction to the workers.

Professor Henri Le Chatlier Pays Tribute to Frederick W. Taylor

FOLLOWING the presentation to him of the certificate of Honorary Membership in the American Society of Mechanical Engineers, by Charles M. Schwab at a luncheon given by the Honorable Myron T. Herrick at the American Embassy, Paris, February 28, 1928, Professor Le Chatlier gave the following address:

Mr. Ambassador, Mr. President, I am much flattered by the high honor which the American Society of Mechanical Engineers has had the kindness to confer upon me. It is a great honor for me to have been adopted by the most important technical society in the United States. One may well be surprised to see the work of a chemist rewarded by mechanical engineers. I owe this favor to the friendly relations I have had with one of your most distinguished predecessors in the presidency of this Society, Frederick Winslow Taylor.

Rather odd circumstances first threw us together. One day I was reading an article in the Revue de Metallurgie on the history of the discovery of high-speed steels, written by an English engineer. The latter ascribed the origin of this invention to the negligence of a clumsy workman which Taylor was supposed to have profited by. To this analysis I added some personal remarks. Having no faith in the influence of chance in the conduct of human affairs, I declared that, in order to make sure of this accidental observation and perfect a process which should revolutionize mechanical construction, Taylor must have had a great deal of knowledge.

These words came to his attention and he thanked me for taking the English engineer's "fairy tale with a grain of salt." He told me that his discovery had been the result of a number of years of methodical study. He was going to describe it in his discourse upon the occasion of his surrendering the presidency of the American Society of Mechanical Engineers, and he sent me a copy of his address. He added that it was his intention to accomplish a work more useful still in formulating new principles for the organization of work in shops, and he asked me if I would give his study a careful examination. I did this with great pleasure. I have an ardent interest in researches of this kind and I immediately bestirred myself to popularize the ideas of your illustrious colleague in France by an active propaganda. This was the beginning of a warm friendship which only death brought to a close.

I was not deceived as to the importance of Taylor's ideas. After having marched at the head of civilization for some hundreds of years, Europe must now go to America for counsel. Thanks to an unparalleled prosperity, you are graduallly becoming masters of all the world's market. In order to keep our place in the sun we must study your methods and try to assimilate them. Missions of engineers and of workmen are continually going to the United States to inform themselves regarding this industrial evolution, of which Taylor was the initiator.

In a recent article in the Saturday Evening Post, an American journalist, Garet Garrett, regarded the discoveries of these missions in a humorous vein. One sees the conveyor-belt in workshop practice as the keystone of your success, another, the bonus system, a third, the institution of shop councils, etc. The author of the article very reasonably remarked that these observations in themselves only distinguish certain effects but by no means the causes of American prosperity. He would ascribe this prosperity to the American spirit, but unfortunately he does not make clear to us in what this spirit consists, nor in what quality or degree it differs from the European mind.

I have given this problem some thought. One of the most important factors of your success is, doubtless, enthusiasm in work, but among the leaders of industry on both sides of the Atlantic, this quality appears to be about equal. If our workmen accomplish less than the American workmen, they are also paid less and their wages do not accordingly increase the cost of production. For them this only results in an inferior social situation, without its constituting a very serious obstacle to our economic development. A second essential factor in the creation of all wealth is the education, the knowledge of the engineers who direct the factories. But our schools seem to be fully equal to yours; our methods of teaching are often adopted by you. . . .

In order to advance civilization, that is, to make scientific discoveries and to utilize inventions, imagination is needed. We have never been reproached with lacking it. We can cite many French discoveries and inventions; the creation of chemistry by Lavoisier, of thermo-dynamics by Sadi Carnot, of electro-dynamics by Ampere. Likewise in the field of industry we are justified in being proud of the hydraulic cement industry created by Vicat, of the soda industry founded by Leblanc and Schloesing, of the aluminum industry, by Henri Ste. Claire Deville, of cast steel, by Martin, etc. In these industries we have as yet no competition to fear.

If labor, knowledge and imagination are marvelous tools in the production of all wealth, it is the more essential to know how to employ them. A chisel does not make a sculptor, nor a brush, an artist. Here, unfortunately, is our weak point. We lack the practical sense, wasting our labor in unproductive ways. In this matter we have much to learn from America. . . .

Taylor's great merit has been in his organizing labor on the basis of common sense. For that very reason he is at times reproached with having invented nothing, with being satisfied to accept principles which have long been common knowledge. The great difference between simple declaration of some more or less banal truths and putting them into practice, is not sufficiently taken into account. Taylor demanded that before setting to work, one should study the best means to employ. This is plain, practical sense, but it requires a great effort on the part of the industrial manager, and this so upsets him that generally he prefers not to make the effort.

All profit resulting from the lowering of costs ought to be divided, Taylor maintains, among capital, labor and the consumer. This seems perfectly logical, but each wishes to keep everything for himself, and guards his personal interests as a dog guards a bone.

Finally, Taylor enjoins upon employers and employes the policy of friendly co-operation which is indispensable for economic success, but each is suspicious of his neighbor and the class struggle prejudices the spirit of collaboration.

The putting into practice of these simple maxims of common sense has provoked a veritable industrial revolution, and America has been able to profit by it before us.

You are, Mr. President, one of the most authoritative representatives of the new mentality to which your country owes its present prosperity. In assuming the Presidency of the American Iron and Steel Institute which is comparable to our Comité des Forges, you have recommended to your colleagues that they deal with each other in a spirit of friendly co-operation, you have pledged them to the task of replacing competitive wars with agreements founded upon mutual respect between the personnel of one establishment and that of another.

This example set by the leaders has been understood and imitated by workers. In accomplishing friendly co-operation between employers and employes, you have attained higher wages than are paid in any other country, and lower costs, in spite of all competition. We must applaud this result and hope that we shall not have to wait too long before emulating you.

Permit me to remind you that seventeen years ago, when I wrote the preface to Taylor's principles of scientific organization of labor, I already foresaw this league between masters and workers as the essential condition of our industrial rehabilitation. I am flattered to find myself thus in agreement with the old president of the greatest technical society in the world and the new president of the greatest industrial syndicate.

When the ways of friendly collaboration will have been established in the heart of each of the nations of our old Europe, we may hope to see them flourish elsewhere and also to influence the relations between peoples. Upon that day civilization will have achieved a new advance without precedent in the history of the world.

Reviews

Business Cycles and Business Measurements, Studies in Quantitative Economics. By Carl Snyder, The Macmillan Company, New York, 1927, pages xiv, 326.

This is the first book since the publication of Mitchell's "Business Cycles" (1913) that eschews "business forecasting" and presents us with a series of "Studies in Quantitative Economics" that are sane, painstaking and exhaustive. The author's conception of what constitutes "Quantitative Economics" may be summarized in his own words:

"Although there have been notable brilliant forecasts of certain economic series . . ., there have been also innumerable dismal failures . . . But the importance of an intelligent analysis of the various factors of the business cycle, a measure of their intensity, an understanding of their changing relationships, and an exact quantitative expression of the measurement of economic events should lead to a much more intelligent prevision of business, and to a lessening of the severity of business cycles. Within reasonable limits we can now understand what is happening, and what has happened, and we can estimate roughly what is going to happen. And it is through measures of the type described in the preceding chapters, that much can be done toward the intelligent understanding that should eventually lead to control of the business cycle." (p. 236)

The measures of the type described in the preceding chapters are, of course, not altogether new in the field of economic statistics. Between Mitchell and Snyder have come Persons, Day, Stewart, King, Rorty and others. Prices, production, volume of trade, the securities market and numerous other "time series" have been subjected to statistical treatment—have had their secular trends and seasonal variations computed and eliminated and their "cycles" exposed to the gaze of the initiated as well as the uninitiated. In this respect the author has done no more than extend these series further back, to the 1870's, than most others, lacking his facilities, were able to do. But he has done more than that. He has brought most of these series together, compared them and reached two very important conclusions: first, that, alone, no one economic series, however basic, can be employed as a satisfactory barometer of general business conditions; second, that bank clearings, reduced to a volumetric basis through deflation by an appropriate price index, yield as satisfactory an "index of business" as the most comprehensive "index of the volume of trade," Carl Snyder's own composite of fifty-six series. And this "clearings index of business," as the author calls it, is of course the more readily available.

Not the least service rendered by the author is the inclusion of sixty-four pages of tabular matter, fifty-six charts, and for most of the series considered, the equations for their secular trends and their "seasonals."

JOSEPH M. GILLMAN[1]

Currency and Credit. By R. G. Hawtrey, Longmans, Green and Company, London, 1928, pages vii, 477. (Third Edition.)

The establishment of a sound monetary system is a matter of vital concern to every individual but progress along this line will be vacillating and slow until a much greater proportion of business men and politicians have mastered the fundamental principles which are discussed in this book.

In this third edition, Mr. Hawtrey has made a clear division between the theoretical portion (Part I) and the historical (Part II). The reasoning in Part I "has been elaborated or amended, in the light of the multifarious discussions evoked by the monetary experiences of the last few years" and matters of fact have been brought up to date.

To the great majority of people, the sole guides to an ideal system of currency and bank credit are that: (1) There shall be ample supplies of both currency and credit to meet the legitimate demands of industry and trade; (2) banks shall always be in a position to pay out currency to meet the full requirements of their demand depositors, and (3) currency of all forms shall be freely redeemable in gold, at least for foreign exchange purposes. Although all of these qualities are still fundamental to a sound monetary system, their strict observance will not prevent major cyclical and secular changes in the general price level such as we have had in the past, and which have been the cause of really stupendous economic losses and injustices, and untold social evils. As Mr. Hawtrey points out, our monetary system should be so set up and administered as to provide us with a relatively stable price level.

He does not work out in detail a plan for the accomplishment of this objective, but suggests that: "What is desirable is not the indiscriminate abandonment of the old gold-reserve conventions, but the regulation of gold reserves by international agreement with the express object of preventing either a rise or fall in the wealth value of gold," (p. 106), and, "The Genoa Resolutions of 1922, combined with the credit policy adopted by the Federal Reserve Banks in America during recent years, hold out hopes of a more scientific system. A timely intervention by the central banks of the world, to check an expansion of credit before it has gone too far, will escape the need for a subsequent contraction. The price level all over the world will become relatively stable; the unemployment and financial crises associated with the fall of prices will be avoided; so will the friction arising from the continual adjustment of wages to the cyclical variations in the purchasing power of money." (p. 155).

In connection with Mr. Hawtrey's reference to the policies of our Federal Reserve Banks it should be noted that these banks have no authority under the Federal Reserve Act to conduct their operations with a view toward stabilizing the purchasing power of money, however desirable this policy may be.

Such are the main theses of this book, but the many ramifications of the subject are discussed somewhat in detail and the historical materials is of much value, although it is largely restricted to English and French monetary affairs.

For one who has never made a study of monetary economics the book will require very careful reading as the reasoning is quite involved and the difficulty of following the line of thought is further enhanced by the use of terms which are peculiar to the author's own nomenclature. Without this peculiarity the book would undoubtedly have a wider reading.

---

[1] Economist, Cavendish Trading Corporation, New York.

Few exceptions to the conclusions will be taken except his implied contention that the business cycle can be practically eliminated by the development and proper administration of a sound system of currency and bank credit. That it would greatly mitigate the severity of commercial and financial crises, there is little doubt.

It is to be regretted the author did not point out that stabilization of the general price level against secular and cyclical changes are two distinct problems. Methods which would be reasonably effective in preventing long run changes would not necessarily have any appreciable effect in mitigating the short run fluctuations which are associated with the business cycle, and vice versa.

Mr. Hawtrey has made a scholarly contribution to the literature on money, particularly in its international aspects.

HUDSON B. HASTINGS[2]

The Distribution Age. By Ralph Borsodi, D. Appleton and Company, New York, 1927, pages xv, 321.

Mr. Borsodi's book is one further convincing addition to the literature which is saying that scientific management is not scientific until it concerns itself as much with distribution as with production. The reasons for the high cost of distribution are what preoccupy this author. The major emphasis in his analysis is upon the retailing process and upon the prestige which the retailer should have in the economic scheme as the one who holds the pulse of the consumer and can therefore prescribe for him most accurately .

In the course of his analysis the author has a good deal to say about the wastes of advertising; in fact, he leaves it with scant economic justification, at least, in the form in which it is currently carried on.

Like a number of other recent writers, Mr. Borsodi is oppressed with the extraordinary paradox of our economic system. If his book does no more than drive home to the reader the ironic character of that paradox, it will have performed its service. For he is saying that we have the facilities, industrially speaking, to produce probably twice as many goods in the aggregate as are now made available, if only we possessed the economic wisdom that would put into consumers' hands a purchasing power that would enable them to absorb this potential production. The central limit upon quantity manufacture today is not machinery or technical knowledge. It is inability to get purchasing power into the public's hands so that consumers will move the goods off the shelves.

Mr. Borsodi's remedies for this condition seem to the present reviewer far less competently viewed than his analysis of the weaknesses of the present structure. He advocates more competition, more cutting of costs, especially transportation costs, more distribution of consumers' buying power through the securing of higher wages, more patronage of the arts to divert surplus wealth from capital uses to artistic consumption uses. To one who has followed his strictures against the competitive system with care, the prescription of more competition may seem unbelievably naive. But when one has got through considering possibilities of further consolidation, monopoly, price-fixing, public regulation of security issues, etc., one realizes that it is not easy to choose among the several possible alternatives. One only realizes that some choice must be made if the goods which we now produce so cheaply are to be available for the consumer at prices reasonably related to their manufacturing costs.

Indeed, this book seems to the reviewer to call attention anew to the fact that the next great apostle of scientific management will be the one who can state some general formula that will disclose to a bewildered economic world the middle way between ruthless competition and publicly owned and operated monopolies, a way which will secure the economies and benefits of each.

ORDWAY TEAD[3]

Economic Institutions. By Willard L. Thorp, The Macmillan Company, New York, 1928, pages 306.

Professor Thorp's contribution to the series which was primarily called "The Worker's Book Shelf" and now bears the name of "The World Today Book Shelf" purports to be new only in its way of attacking the material of economics. The author is an effective disciple of the so-called institutional school of approach of economic analysis. The book is simplified for a popular audience; and the treatment is of a character to adapt the book splendidly for use in foreman and executive training courses. It is to be hoped that the author will some time make the present study the basis for a more exhaustive statement built around substantially the same outline. But as it stands, the book is an effective introduction to a study of "business economics."

ORDWAY TEAD[3]

The Mathematics of Engineering. By Ralph E. Root, Ph.D., Williams & Wilkins Company, Baltimore. 1927, pages xiv, 540.

This is a book for the advanced student of mathematics, and was written to meet the needs of student officers at the Postgraduate School of the Naval Academy. It largely aims so to present mathematical science that it will be a useful tool instead of merely a set of mental gymnastics. To this end, the examples which are appended to each subject are drawn from the field of engineering, and their solution will tend to ground the user of the book in the mathematical approach to engineering problems.

The book is not one that can be used by the tyro. A working knowledge of calculus and of differential equations is necessary. To those who have such knowledge, however, the book should prove of considerable value.

A partial outline of the scope of the book includes functions, notations, graphs, limits and continuity, derivatives, integrals, transformations, evaluation of functions, complex variables, treatment of empirical data and other material.

ROBERT T. KENT[4]

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[2] Professor of Industrial Engineering, Yale University.

[3] Columbia University and Harper & Brothers.

[4] Devine Brothers' Company, Utica, N. Y.

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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

IN THIS NUMBER

The Budget as a Medium of Executive Leadership
JOHN H. WILLIAMS

A Method of Evaluating Clerical Jobs and Employes
R. C. NYMAN

Professor Henri Le Chatlier on Frederick W. Taylor

Reviews

Engineering Societies Building
29 W. Thirty-Ninth St.
New York

AUGUST, 1928 VOL. XIII, NO. 4

Objects of the Taylor Society Incorporated

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure—for the common benefit of the community, the worker, the manager and the employer—understanding and intelligent direction of the principles of administration and management which govern organized effort for accomplishing industrial and other social purposes.

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptation and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective responsibility.

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The membership of the Society comprises Members, Junior Members, Honorary Members, Life Members, Firm Members, Contributing Members and Student Associates. Application for membership should be made on a regular form which may be secured from the Society. New members may be elected directly to the grades marked*.

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   For any of the above grades a person engaged in educational work, state service, government service or the service of any other non-commercial enterprise of an eleemosynary nature shall pay one-half the initiation fee and one-half the annual dues of the grade to which elected.

3. *Honorary Member*: A Fellow, over 50 years of age, who has rendered exceptionally distinguished service in the advancement of the science and the art of management.

4. **Life Member*: Any Fellow or Member who has prepaid all dues by the payment of $500.

5. **Firm Member*: A firm or organization interested in the advancement of the science and the art of management which desires to make the service of the Society available to members of its organization. A firm member designates two representatives (who may be changed from time to time at the organization's discretion) who have all the rights and privileges of membership except the right to vote and to hold office. Annual dues, including two subscriptions to the Bulletin, $40.

6. **Contributing Member*: Any individual, firm or organization desiring to promote the work of the Society by an annual contribution of $100 or more. A contributing member has all the privileges of personal or firm membership, as the case may be, including one subscription to the Bulletin for each $20 contributed.

7. **Student Associate*: A regularly enrolled student of management in any school of engineering, business administration, commerce or arts, of collegiate rank, or a graduate of such institution who has applied for membership not later than one year after graduation, elected upon recommendation of the instructor in charge of management courses. A Student Associate may become a Junior Member, without payment of initiation fee, any time after graduation and must become a Junior Member at the age of 25. Annual dues including subscription to the Bulletin, $3.

All dues are payable in advance, either annually or in semi-annual installments. The fiscal year is November 1 to October 31. Members elected other than at the beginning of the fiscal year are charged pro rata (quarterly) for the first year.

AUG 24 1928

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BULLETIN OF THE
TAYLOR SOCIETY
AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Published by the Taylor Society Incorporated at
Engineering Societies Building
29 West Thirty-Ninth St., New York
Cable address: Taysoc

The BULLETIN OF THE TAYLOR SOCIETY is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

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Published every other month. Per year to Members $2.50; to others $3.00. This issue $.50.

Entered as second-class matter, Dec. 17, 1921, at the Post Office at New York, N.Y under the Act of March 3, 1879.

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The demand from public and industrial libraries for back issues of the BULLETIN to complete sets is constantly increasing while our ability to meet the demand is decreasing as more and more issues are exhausted. Readers who do not bind their BULLETINS can be sure of their being widely used if they will return them to the Society office. Fifty cents each will be paid for the following especially needed numbers. There is a particularly urgent demand for the two numbers printed in bold face type. Vol. 1, No. 6 (1915), **Vol. V, No. 6 (1920),** Vol. XI, Nos. 1, 2, and 3 (1926), **Vol. XII, No. 4 (1927).**

This vacation-month issue of the Bulletin contains one third the standard number of pages, a reduction for which there was advance compensation by extra pages in preceding issues.

Comment

IN THE report of the proceedings of the International Relations Association Congress — see page 169—a distinction is made between mass production and scientific management, which we are glad to note. We are reminded by contrast of the common failure to distinguish between certain terms which now have vogue—mechanization, mass production, rationalization and scientific management.

SCIENTIFIC MANAGEMENT is not identical with any of the other three. It may or may not coincide with any of them, but it is something different. It had its origin in small sized plants manufacturing various products on multiple purpose machines involving manipulation and adjustment where variability and chance are present; and its basic principles are three: research and experiment to discover and separate basic and constant from superficial and variable factors; the establishment and maintenance of these as standard for planning and direction of execution; and a system of control of execution in terms of these standards, with resultant increase in the results of cooperative effort.

MECHANIZATION connotes primarily the transference of skill to mechanical equipment—labor relieving machinery. It has relation to volume of production, and in general the larger the plant the greater the mechanization. *Mass production* identifies what the term indicates—quantity output; and it is made possible on the one hand by markets which give a constant large volume of orders, and on the other hand by the facilities of mechanization. Mass selling, mass production and mechanization are Siamese triplets. *Rationalization*—a postwar German concept—was suggested by the European cartel. It connotes a "rational" harmonizing of the operations of entire industries, usually directed or at least sympathetically promoted by government, for the purpose of furthering national industrial welfare. It finds it expedient to utilize mechanization, mass production and scientific management in that endeavor. Perhaps the beginning of rationalization in the United States is the work of the Division of Simplified Commercial Practice of the Department of Commerce.

The Budget as a Medium of Executive Leadership[1]

The Budget Properly Handled Furnishes a Means of Combining Instruction and Inspiration for Creative Activity Which Is Unique

By JOHN H. WILLIAMS
Consulting Engineer, New York

A TIME study and budget represent different aspects of the same thing, an estimate. When Frederick W. Taylor first advocated the use of time study in setting bonuses and in planning and routing work in the factory, most of the people who heard him and *understood* him said his plans involved too much detail and added too much to overhead costs; that they were beautiful in theory but impracticable. The people who heard him and *did not understand* said, "Fine!" and immediately proceeded to apply the term time study to the same old averages of performance and guess work estimates they had previously used.

The difference between a time study and an ordinary estimate of time is that time study uses the job analysis, that is, breaks the job into its component parts and studies each of them separately. It also studies the conditions and methods of work in their inter-relation. Standards are set with reference to prescribed conditions. The same difference exists between a popular and a scientific budget with the added confusion, in the case of the budget, of calling both by the same name. As a preliminary to what I shall say with reference to the budget as a medium of executive leadership, I shall first review briefly the present general practice in the use of budgets and, second, suggest certain refinements which add very much to flexibility.

Present General Practice in the Use of Budgets

Budgets differ from estimates and forecasts principally in form. They are used in industry primarily in making appropriations, in determining policies and in controlling expenditures.

In the case of budgets used in making appropriations, where there is a prescribed sum of money for certain general purposes which must be expended under different responsibilities, the person in charge of each responsibility is required to make a separate budget. These budgets are then considered in the light of the relative importance of the different responsibilities. After being revised so as to bring the proposed expenditures in relation to the relative importance of the different responsibilities, the budgets are used for control of expenditures.

In determining policies the budget may be used, for example, to compare the cost of distribution, say of milk or bread, by horse drawn wagons and by automobiles, and possibly by post or through an outside delivery agency; to determine the relative desirability of putting more salesmen on the road or of increasing sales by direct mail and periodical advertising; to determine the desirability of producing something now being bought from outside manufacturers. In the case of all such budgets, certain factors, such as the amount of sales to be expected under different conditions, must be assumed, but budgets are usually made to show what can be expected under minimum as well as reasonable expectations.

Budgets for the purpose of controlling expenditures are usually more detailed than those for other purposes. The items preferably are grouped according to the accounting classification to which they will be charged. The persons in a position to effect economies in the different items usually participate in making the figures for the budget. The principal difficulty with budgets for this purpose is that general economic conditions, styles, good or bad weather, etc., may so change the conditions upon which the budget is predicated that by the time actual expenditures are available for comparison the budget is more or less useless.

The questions most often asked with reference to budgets are: What sales quota should be used in making a budget and how can one compare budget and actual figures where circumstances have materially changed since the budget was made? The conventional answer to these questions is that you must of course base your budget upon whatever sales you feel reasonably assured of making, and that you must refigure your budget whenever conditions change from those upon which the budget was based.

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[1] Paper presented in New York, January 12, 1928, as part of a course of lectures on "Leadership." The course is under the direction of Dr. H. C. Metcalf, Bureau of Personnel Administration, 420 Lexington Avenue, New York, and will later be available in printed form.

A Flexible Budget

Working out more satisfactory answers to the foregoing questions has led to some interesting developments in the use and effectiveness of budgets. These questions both resolve themselves into the necessity for a budget which is applicable to different and changing conditions. This necessity has been met by making the original budget in *items, or we might say factors, rather than in totals* and by not *computing* a budget which is to be compared with actual figures until volume of sales and all other conditions are known.

Roughly speaking, we make our budget in terms of tons, yards, or some other unit of measurement, but always in terms of two elements: (1) fixed cost, that part of cost which remains constant irrespective of fluctuations from the smallest probable volume of business to the largest practicable capacity of the business, and (2) variable cost, that part of cost which should vary in proportion to the volume of business done.

As a practical illustration, suppose you want to include in your budget the cost of paper and printing for a one page circular but do not know how many circulars you may use. You might get an estimate from your printer of so much for the first thousand, say fifteen dollars, and so much for each additional thousand, say five dollars. Deducting five dollars representing the cost of an additional thousand circulars from the fifteen dollars representing the cost of the first thousand, we get ten dollars as the "fixed" cost and five dollars per thousand as the "variable" cost. Following this general procedure it is possible to determine a fixed and a variable cost and a practical unit for computing each item of the budget. When this has been done, it will readily be seen how both the advantage of making the budget in advance of the expenditures, yet computing it on the same basis as the expenditures, may be achieved at one and the same time.

In practice we have found it necessary to create one formula for determining the "fixed" and "variable" cost for *all* items used in the same budget, otherwise it is impossible to prove the work. Following is a copy of a formula I worked out for this purpose in 1921 in connection with a very interesting situation.

METHOD FOR DETERMINING BUDGET FIGURES FOR ITEMS WHICH DIFFER IN VARYING PROPORTIONS ACCORDING TO THE BUSINESS DONE

FORMULA

Determine largest and smallest probable volume of business (expressed in dollars) and the cost of the item in question, for each such volume.

Per cent Variable Cost—Difference between largest and smallest cost, divided by difference between largest and smallest volume of business.

Fixed Cost—Either largest or smallest volume, less variable cost for whichever volume is used.

EXAMPLE

	Volume of Business	Cost	Per Cent Variable Cost
Largest	$400,000	$900	
Smallest	200,000	700	
	$200,000	$200	
		$200,000	.001

The .001 represents the relation of the variation in *cost* to the variation in *volume* or the *per cent variable cost.*

Total Cost on Sales of $400,000	$900.
Variable Cost (.001) on Sales of $400,000	400.
Fixed Cost	$500.

or

Total Cost on Sales of $200,000	$700.
Variable Cost (.001) on Sales of $200,000	200.
Fixed Cost	$500.

APPLICATION

Question—If the volume of business is $300,000 what would the budget figures for the item in question be?

Answer—One tenth of one per cent of the volume (300,000 x .001=$300) as representing the *variable cost* plus $500, as representing the *fixed cost*, or $800 *in all.*

There were a great many concerns in difficulties about that time. Some of them were actually losing money. The question was constantly put to me as to what would or could these concerns make when business returned to normal. Through the application of the above formula, using the best year they had ever had as representing a maximum and the poorest year they had ever had, which in most cases was the current one, as representing a minimum, we were able to make a list of budget items in terms of fixed and variable cost from which we were able to compute prospective profits and losses on different volumes of business and even at different commodity and labor costs.

It is impossible in one evening's talk to describe fully the making of a flexible budget but I refer those who are interested to the BULLETIN OF THE TAYLOR SOCIETY of April, 1922, in which, under the title "A Technique for the Chief Executive," I give the only exposition of the flexible budget that so far as I know has ever been printed.

The Budget as a Medium of Executive Leadership

The greatest difficulty of leadership is to impart information without creating antagonism, which leads to an effort to find other ways of doing the thing rather than to understand the explanation.

Up to a certain age, which is about the time of finishing one's education, most people are more easily taught than afterwards. The time when the change takes places varies. Psychologists explain that it is natural to take pride in learning so long as one is frankly a pupil, and that it is equally natural that when the pursuit of knowledge is over one should resent being given too much information. It is interpreted to imply a lack of knowledge and is resented as depriving one of the privilege of working out the problem in one's own way.

The budget properly handled furnishes a means of combining instruction and inspiration of creative activity which is unique. To obtain the full benefit, responsibility and credit for effective work and economy should always be given to the person in a position to effect such economies. The job of the man higher up should be to help and support those responsible for effecting economies to exercise their own authority but not to make decisions for them.

It is here that the budget comes in. Suppose the cost of a department, whether it be in an office or factory, has unduly increased or the quality of its work is unsatisfactory. The conventional procedure is for the executive in charge to send for the department head and show him the faults of his department. The department head has probably passed the period when his pride is in learning, and however considerate the executive may be, the focusing of attention on faults will be regarded as criticism. If the department has been budgeted a different situation exists.

The mere existence of a budget, which it is the duty of the executive to enforce, relieves him of the personal equation. With the budget in hand, he may send for the department head. In place of his pointing out the unsatisfactory results achieved and what could or should have been done to prevent them, they go over the budget together to see what can be done to bring about the desired results. This avoids the necessity for finding fault. The executive should remember that if a department head does not deserve this kind of treatment the best thing he can do is to fire him, and put in his time on a more competent man.

You may wonder why all this cannot be done without a budget. The budget, whether flexible or not, takes unto itself the onus of the situation and puts the executive more nearly on a level with the department head. It puts them in a position of having a common purpose. This is more stimulating to the department head than you can imagine unless you have recently been a department head and have had this experience. Also, the existence of the budget as a medium of expression of results achieved objectifies the conversation. There will be encouraging progress if the executive will avoid preaching and interest himself in developing the other man's ideas rather than in exploiting his own.

The situation should be developed through questions as to what it should cost under this or that condition to achieve certain maximum and minimum results. Here comes the point of the flexible budget. You show the department head how, with this information, he can work out his fixed and variable costs and measure his accomplishments, under the exact conditions which prevail, in terms of weeks or months at will. What is even more important, instead of telling him, you have caused him to analyze the situation and to find out for himself what can and should be done.

You may say it would be easier to do the work yourself, but I want to suggest that this kind of thing is the essence of leadership and that without this sort of patience and ability, one had best stay in the class of doers. There are three stages in the development of leadership. First, learning; second, doing; and third, leading. The trouble is that people in the second stage want the prestige of leadership without giving up the kick of doing.

In closing I want to illustrate the flexible feature of a budget and tell a story which will give you a better idea of how the making or revision of a budget may be used as an educational medium.

Costs as such do not serve the ends of management. They occur after the fact. What is needed is something that one may read as he runs. Suppose that you had to motor to Tarrytown within an hour (a distance of say thirty miles) on a road that you knew but with no land marks to indicate your progress. A watch would tell you if you got there in the hour but it would not help you to determine your progress while there was still time to affect it. If when the hour was up, you had not reached Tarrytown you would be in the same position as the executive who does not know that his costs are too high, until the job is done. But if you had a speedometer, the moment your speed slackened to less than thirty miles an hour, even though it were in the first mile, you would know you must make up this lost time if you were to get to Tarrytown in the hour. The flexible budget is to management what the speedometer is to the motorist.

There is no one thing which to my mind is so important or helpful in the carrying out of an undertaking as the necessity for predetermination. It forces you to look before you leap. It obviates finding yourself suspended in mid-air without having decided where to land. Predetermination is sometimes difficult and irksome but it is fundamental to all scientific procedure. You may ask how one is to determine things which are in their very nature dependent upon other determinations not yet made. I will tell you an experience which will, I think, answer this question satisfactorily.

In making a budget for a concern which sent out a great deal of printed matter, the head of the Forwarding Department said it was impossible to make a budget for his department without knowing what he would be required to ship. Without telling him how to make his budget I asked him a number of questions which brought out the following facts:

1. The amount of money which had been budgeted for the printed matter.
2. The average weight of such literature per hundred dollars.
3. The average distance of the places to which the material was to be delivered.
4. The cost per ton for transportation over the average distance.
5. The average size of the paper wrapped packages, the average size of the box used, the number of average packages per ton, the number of average boxes per ton, the cost of paper, cord, and wrapping the average package and the cost of the box and packing the average box.

With these determinations, I do not have to tell you how he arrived at his budget. These budget items, as applied to the actual shipments made, came within $1000 of the total cost of something over $100,000, and the total cost was very considerably less than it had been the previous year for sending out a similar amount of material.

International Industrial Relations Association Congress Cambridge, England—June, 1928

THAT mass production is insecure for both labor and capital because of its dependence on wide markets, and that social research and scientific management under the joint auspices of labor and employers are needed to give stability to industry and to protect wage earners against those effects of mechanization which are detrimental, was pointed out by speakers from the United States, Great Britain, Germany and other countries at the Congress of the International Industrial Relations Association (for the study and improvement of satisfactory human relations and conditions in industry). The Association recently completed a five days' discussion of the subject, "Fundamental Human Relationships in Industry," at Cambridge, England. The Congress was attended by personnel managers and welfare workers, employers, representatives of labor, factory inspectors and research workers from twenty countries and was addressed by many noted speakers.

The officers elected for the ensuing three years were President, C. H. van der Leeuw, Partner, Messrs. de erven de wed. J. van Nelle, Holland; Vice-Presidents, Miss Mary van Kleeck, Russell Sage Foundation, New York, Miss M. L. Fledderus, Holland, and Erich Lubbe, Chairman of the Works Council (employes), Siemens, Ltd., Berlin; Treasurer, Charles E. Jacob, Managing Director, Messrs. W. and R. Jacob and Company, Ltd., of Dublin, Ireland.

A Method of Evaluating Clerical Jobs and Employes[1]

Designed to Serve as a Basis for More Scientific Control of Office Problems and More Intelligent Placement of Office Workers

By R. C. NYMAN
Davison-Paxon Co., Atlanta, Ga.

THE NUMBER of clerical workers in the industries of this country has increased seventeen fold in the last fifty years, while the population has little more than doubled.[2] With this tremendous increase have come economic wastes and human injustices that are at last calling the attention of major executives to office problems. The principles of scientific management that were first applied in the plant only are now being utilized in office management as well.

A method of analyzing, rating and classifying clerical jobs and employes that has been found to be effective and easy to carry out is briefly described here and the forms used for securing and utilizing the necessary information are reproduced.

The form represented in Figure 1 is used to secure the necessary information for analyzing jobs. This can be submitted directly to the clerks for filling out and later checked by the job analyst with the department head or chief clerk to be sure that replies are complete and authentic. Care should be taken that a job is not over or under estimated.

The form shown in Figure 2 has been used to prepare the analysis from which the job rating and classification are determined. Variations in the form may of course be advisable to fit special cases. It provides for entering the job title; the department and section in which the job is done; the person to whom the employe reports—of value in determining the relative importance of the job; the points of contact, and the actual duties of the job. Transitive verbs should be used in enumerating the duties of the job in order to insure a description of the action performed. The form also provides for listing the minimum qualifications that a person must have in order to be placed on the job at all. These should be drawn up by the job analyst from the rest of the material on the form, but no attempt should be made to establish standard requirements for the job at this time. This is done more accurately from the job ratings than from the information so far available.

After the analyses are completed the form illustrated by Figure 3 is used for rating each job and setting up standard requirements for it. Certain factors enter into every job, such as skill, intelligence, etc., and certain elements enter into each one of these factors, such as, manual, numerical and verbal skill. By using standard definitions of these factors and elements, together with the job analysis sheets, it is possible to check on this form the relative importance of each factor and each element in any job. Care should be taken to set up standard requirements without any consideration of the person or persons already performing the work. The rating of persons comes after the jobs have been rated, classified and bases of pay established.

After the job ratings have been completed by the job analyst they should be submitted to the department head for his comments. The ratings and comments of the department head should then be brought before a committee of executives thoroughly familiar with the office operations. This committee should finally determine the "standard" requirements for each job.

These then serve as a basis for placing each job in one of four classes.

Class I includes minor executive jobs, specialist jobs, jobs requiring technical knowledge, initiative, trade knowledge, imagination—all jobs that have a high market value.

Class II includes semiroutine jobs requiring some initiative, special training, experience over a long period, or a high degree of skill. These are jobs of a more or less confidential nature that are not easily filled from the rank and file of applicants or members of the organization.

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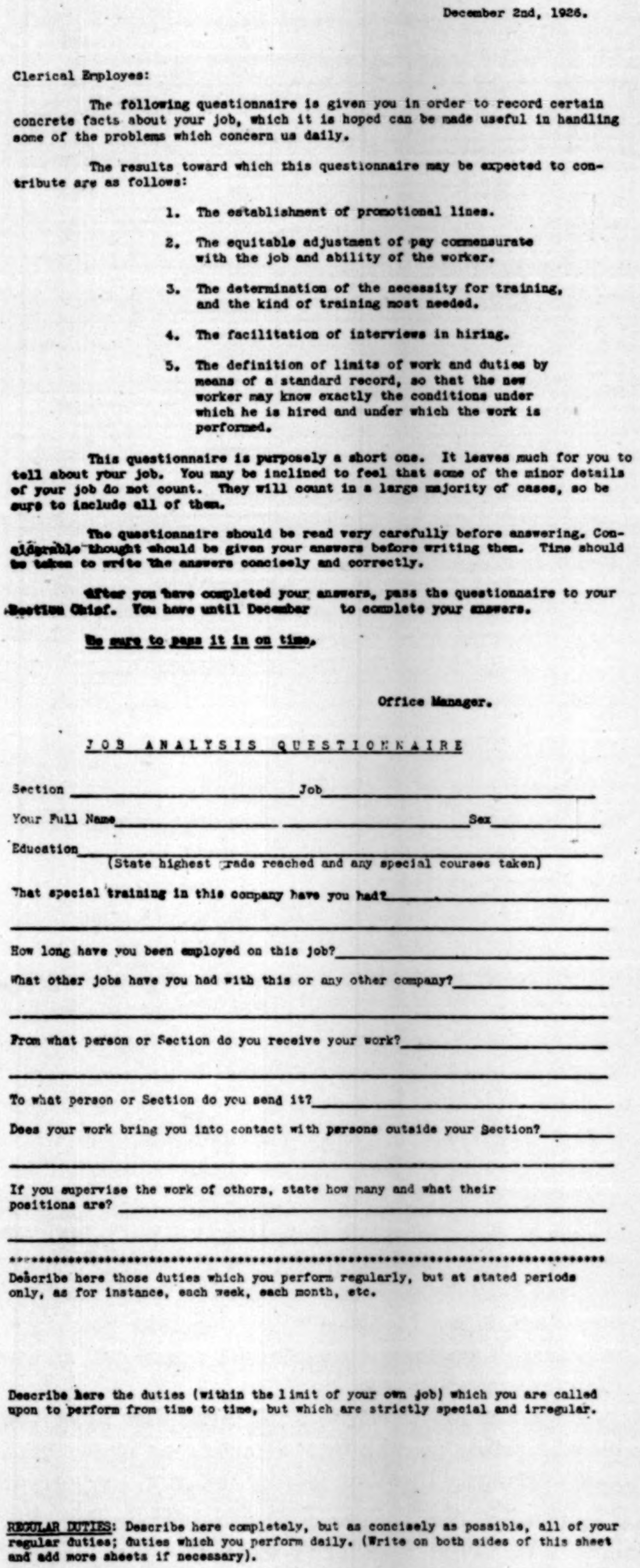
[1] Developed by the author from methods used at the Dennison Manufacuring Company, Framingham, Mass.

[2] Leffingwell, W. H., "The Present State of the Art of Office Management," *Bulletin of the Taylor Society*, Vol. X, No. 2, April, 1925.



December 2nd, 1926.

Clerical Employes:

The following questionnaire is given you in order to record certain concrete facts about your job, which it is hoped can be made useful in handling some of the problems which concern us daily.

The results toward which this questionnaire may be expected to contribute are as follows:

1. The establishment of promotional lines.
2. The equitable adjustment of pay commensurate with the job and ability of the worker.
3. The determination of the necessity for training, and the kind of training most needed.
4. The facilitation of interviews in hiring.
5. The definition of limits of work and duties by means of a standard record, so that the new worker may know exactly the conditions under which he is hired and under which the work is performed.

This questionnaire is purposely a short one. It leaves much for you to tell about your job. You may be inclined to feel that some of the minor details of your job do not count. They will count in a large majority of cases, so be sure to include all of them.

The questionnaire should be read very carefully before answering. Considerable thought should be given your answers before writing them. Time should be taken to write the answers concisely and correctly.

After you have completed your answers, pass the questionnaire to your Section Chief. You have until December to complete your answers.

Be sure to pass it in on time.

Office Manager.

JOB ANALYSIS QUESTIONNAIRE

Section ____________ Job ____________

Your Full Name ____________ ____________ Sex ________

Education ____________
(State highest grade reached and any special courses taken)

What special training in this company have you had? ____________

How long have you been employed on this job? ____________

What other jobs have you had with this or any other company? ____________

From what person or Section do you receive your work? ____________

To what person or Section do you send it? ____________

Does your work bring you into contact with persons outside your Section? ________

If you supervise the work of others, state how many and what their positions are? ____________

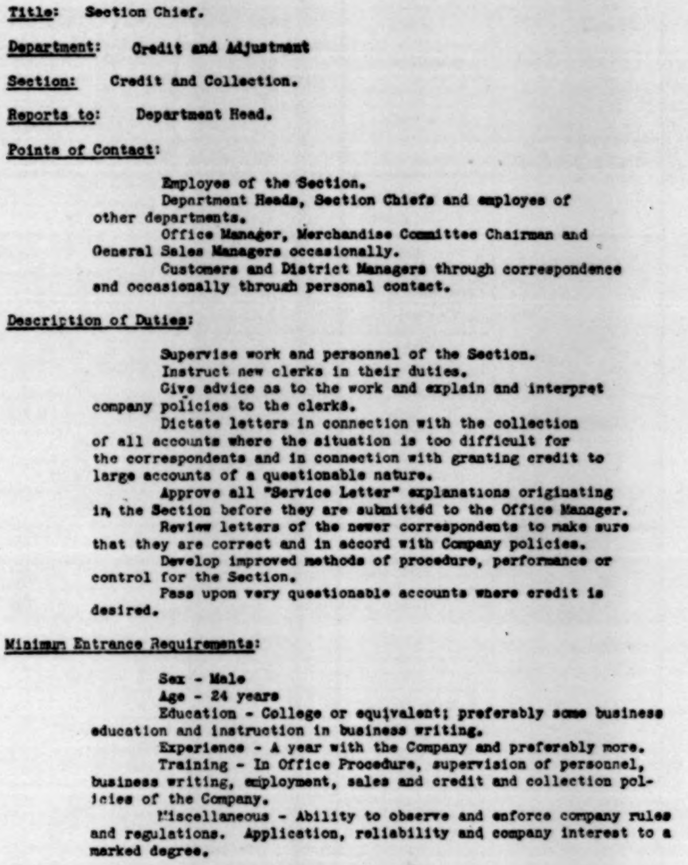
****

Describe here those duties which you perform regularly, but at stated periods only, as for instance, each week, each month, etc.

Describe here the duties (within the limit of your own job) which you are called upon to perform from time to time, but which are strictly special and irregular.

REGULAR DUTIES: Describe here completely, but as concisely as possible, all of your regular duties; duties which you perform daily. (Write on both sides of this sheet and add more sheets if necessary).

Figure 1



Title: Section Chief.

Department: Credit and Adjustment

Section: Credit and Collection.

Reports to: Department Head.

Points of Contact:

Employes of the Section.
Department Heads, Section Chiefs and employes of other departments.
Office Manager, Merchandise Committee Chairman and General Sales Managers occasionally.
Customers and District Managers through correspondence and occasionally through personal contact.

Description of Duties:

Supervise work and personnel of the Section.
Instruct new clerks in their duties.
Give advice as to the work and explain and interpret company policies to the clerks.
Dictate letters in connection with the collection of all accounts where the situation is too difficult for the correspondents and in connection with granting credit to large accounts of a questionable nature.
Approve all "Service Letter" explanations originating in the Section before they are submitted to the Office Manager.
Review letters of the newer correspondents to make sure that they are correct and in accord with Company policies.
Develop improved methods of procedure, performance or control for the Section.
Pass upon very questionable accounts where credit is desired.

Minimum Entrance Requirements:

Sex - Male
Age - 24 years
Education - College or equivalent; preferably some business education and instruction in business writing.
Experience - A year with the Company and preferably more.
Training - In Office Procedure, supervision of personnel, business writing, employment, sales and credit and collection policies of the Company.
Miscellaneous - Ability to observe and enforce company rules and regulations. Application, reliability and company interest to a marked degree.

Figure 2

Class III includes strictly routine jobs requiring but limited education and a short training to produce proficient work. These are jobs easily filled from the ranks or from the ordinary run of applicants.

Class IV includes measured production jobs, or those to which differential piece or hourly rates of payment may be applied successfully.

The rating of jobs and employes is done by giving a point value to various degrees of each factor and element in the job. The rating sheet provides for a possible score of seventy-six points. To place each job in its proper class this total number of points is divided into three parts. Jobs rating from one to twenty-four points are placed in Class III; those rating from twenty-five to thirty-nine points are placed in Class II; and those rating over forty points are placed in Class I. Since Class IV jobs all involve ability to use a special type of apparatus and are capable of objective measurement, they are considered as exceptions. The ratings of these jobs can be used, together with time study, to set differential piece or hourly rates of payment for the various jobs.

SKILL	KIND	NONE	SLIGHT	AVE	MORE THAN ORD.	EXCEPT.
	MANUAL	●				
	NUMERICAL	●				
	VERBAL					●
INTELLIGENCE	KIND	NONE	ROU-TINE	TRADE JUDG.	SUP. JUDG.	MGR. JUDG.
	TECHNICAL				●	
	PRACTICAL				●	
PERSONALITY	KIND	NONE	LITTLE	ORD	MORE THAN ORD.	EXCEPT.
	APPLICATION-RELIABILITY -COMPANY INTEREST.				●	
	TACT				●	
	FORCE				●	
	ABILITY TO TEACH OR SUPERVISE				●	
TRAINING	KIND	NONE	LIMITED	GOOD	MORE THAN ORD.	EXCEPT.
	TRADE TRAINING				●	
	GEN'L EDUCATION				●	
	EXPERIENCE				●	
REPLACEMENT COST	VALUE	NONE	$10-19	$20-29	$30-39	$40-
	MARKET PRICE					●
	PRICE PERSON REQUIRED					●
OPPORTUNITY FOR PROGRESS	POSSIBILITIES	NONE	LIMITED	FAIR	GOOD	EXCEPT.
	WITH COMPANY				●	
	ELSEWHERE				●	
	TRANSFER POSSIBILITIES				●	
COMPANY TRAINING COST	COST	NONE	SMALL	ORD.	MORE THAN ORD.	CONSIDER-ABLE
	LENGTH OF TIME				●	
	TRAINING LOSS	●				
	POINT VALUE OF RATING	0	1	2	3	4

Figure 3

CLERICAL JOB RATING
Department—General Correspondence
Position—Section Chief, Adjustment Section
Job Rating Score—51 points

Figure 4 shows how the various jobs fall into the three classes on the basis of their point ratings.

While rates of pay may vary according to the policy of the company, the locality of the company and the prevailing wage rates, a fairly definite scale can be set up.

Class I jobs are paid $40 a week and upward. Vacations with pay and compensation for illness are included.

Class II jobs are paid from $25 to $39 per week. Vacations with pay and compensation for illness are also included here.

Class III jobs are paid by the hour and do not receive compensation for vacations or illness. The weekly rate ranges from $12.50 to $24.

Class IV jobs are on a measured production basis and do not receive compensation for vacations or illness. The weekly rates range from $12.50 to $40.

The following listing of jobs according to class gives an idea of the way in which individual jobs line up:

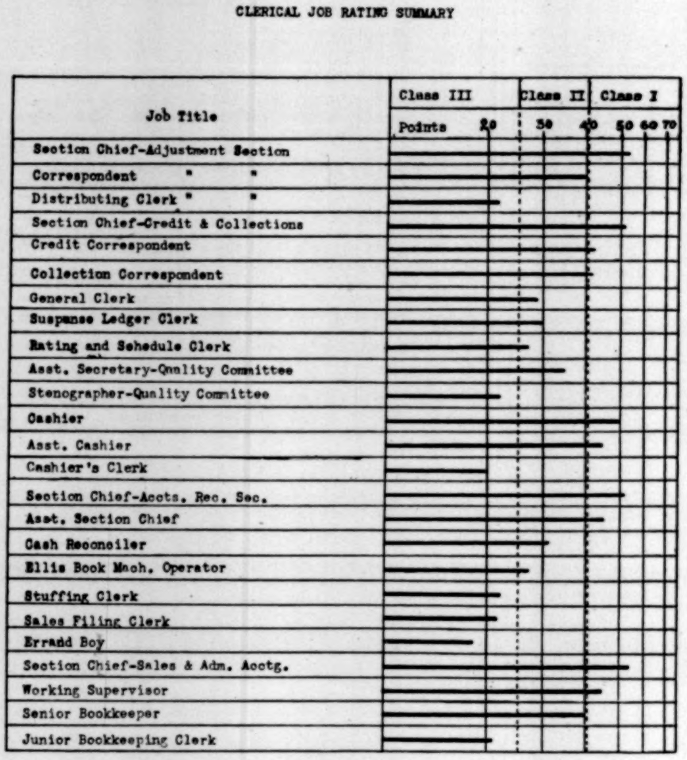


Figure 4

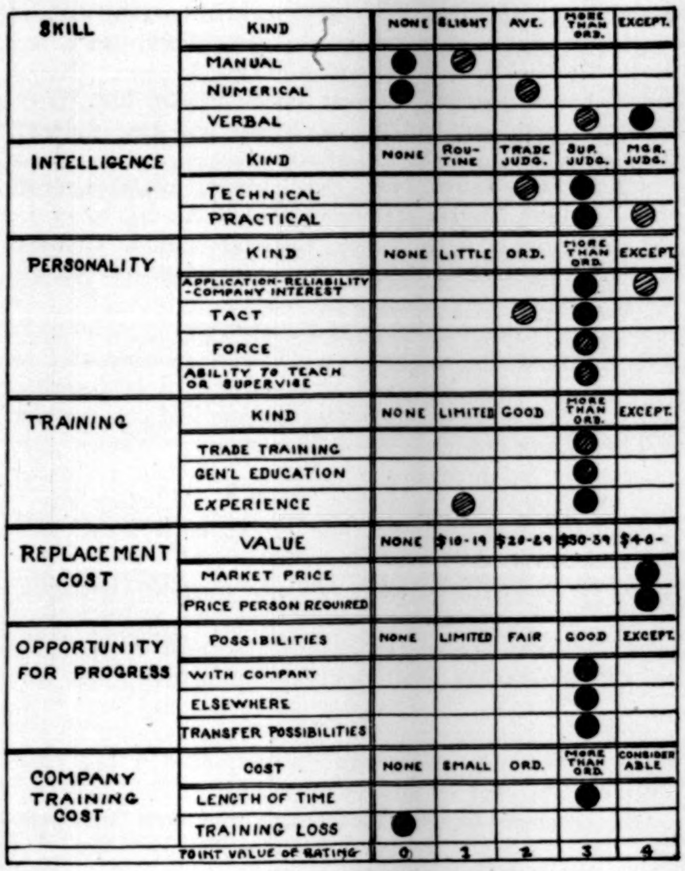
Class I jobs include accountants, cashiers, assistant cashiers, correspondents, cost accountants, statisticians, section chiefs, assistant section chiefs, working supervisors, etc.

Class II jobs include cash reconcilers, classifiers, control clerks, general clerks (some departments), master card operators, rating and schedule clerks, secretaries, senior bookkeepers, suspense ledger clerks, tracers, telegraph message clerks, working supervisors (some departments), etc.

Class III jobs include addressograph operators, junior bookkeeping clerks, cashier's clerks, distributing clerks, errand boys, general clerks, mail clerks, multigraph clerks (also Class IV), numbering clerks, filing clerks, stenographers (routine), stuffing clerks, typists, checkers, etc.

Class IV jobs include Ellis bookkeeping machine operators, Moon Hopkins billing machine operators, multigraph operators, dictaphone operators, comptometer operators, etc.

It should be noted that the jobs that have the highest rating are the most exacting as to personal qualifications. In other words, the more important the job, the more important the person, and the less important the job, the less important the person. It is upon personal factors that a high market value is placed.



SKILL	KIND	NONE	SLIGHT	AVE.	MORE THAN ORD.	EXCEPT.
	MANUAL	●	▨			
	NUMERICAL	●		▨		
	VERBAL				▨	●
INTELLIGENCE	KIND	NONE	ROU-TINE	TRADE JUDG.	SUP. JUDG.	MGR. JUDG.
	TECHNICAL			▨	●	
	PRACTICAL				●	▨
PERSONALITY	KIND	NONE	LITTLE	ORD.	MORE THAN ORD.	EXCEPT.
	APPLICATION-RELIABILITY-COMPANY INTEREST				●	▨
	TACT			▨	●	
	FORCE				◉	
	ABILITY TO TEACH OR SUPERVISE				◉	
TRAINING	KIND	NONE	LIMITED	GOOD	MORE THAN ORD.	EXCEPT.
	TRADE TRAINING				◉	
	GEN'L EDUCATION				◉	
	EXPERIENCE		▨		●	
REPLACEMENT COST	VALUE	NONE	$10-19	$20-29	$30-39	$40-
	MARKET PRICE					●
	PRICE PERSON REQUIRED					●
OPPORTUNITY FOR PROGRESS	POSSIBILITIES	NONE	LIMITED	FAIR	GOOD	EXCEPT.
	WITH COMPANY				●	
	ELSEWHERE				●	
	TRANSFER POSSIBILITIES				●	
COMPANY TRAINING COST	COST	NONE	SMALL	ORD.	MORE THAN ORD.	CONSIDERABLE
	LENGTH OF TIME				●	
	TRAINING LOSS	●				
	POINT VALUE OF RATING	0	1	2	3	4

Figure 5

COMPARISON CLERICAL JOB AND EMPLOYE RATINGS
Department—General Correspondence
Position—Section Chief, Adjustment Section
Employe Rating Score—31 points
Comparison Rating—31 points

When the job ratings and classification have been completed, the employes are rated by the same method. Figure 5 shows how the comparison is made between job and employe. As in Figure 3, the solid circles represent job ratings. The lined circles represent employe ratings. Where a lined circle is surrounded by a heavy outline, it means that the job and employe ratings correspond. The comparison rating, which the employe rating should equal, is arrived at by subtracting from the total job rating the rating points which apply only to the job.

When a sheet similar to Figure 5 has been prepared for each job and employe, the sheets are brought before the committee that was responsible for determining the standard job requirements. When the comparative ratings have been gone over, definite recommendations should be submitted to the office manager on the basis of them. In some cases transfers may be necessary, adjustments in wage, and additional training for the job. Corrective measures and adjustments made possible by this method result in increased production and greater satisfaction to the workers.

Professor Henri Le Chatlier Pays Tribute to Frederick W. Taylor

FOLLOWING the presentation to him of the certificate of Honorary Membership in the American Society of Mechanical Engineers, by Charles M. Schwab at a luncheon given by the Honorable Myron T. Herrick at the American Embassy, Paris, February 28, 1928, Professor Le Chatlier gave the following address:

Mr. Ambassador, Mr. President, I am much flattered by the high honor which the American Society of Mechanical Engineers has had the kindness to confer upon me. It is a great honor for me to have been adopted by the most important technical society in the United States. One may well be surprised to see the work of a chemist rewarded by mechanical engineers. I owe this favor to the friendly relations I have had with one of your most distinguished predecessors in the presidency of this Society, Frederick Winslow Taylor.

Rather odd circumstances first threw us together. One day I was reading an article in the Revue de Metallurgie on the history of the discovery of high-speed steels, written by an English engineer. The latter ascribed the origin of this invention to the negligence of a clumsy workman which Taylor was supposed to have profited by. To this analysis I added some personal remarks. Having no faith in the influence of chance in the conduct of human affairs, I declared that, in order to make sure of this accidental observation and perfect a process which should revolutionize mechanical construction, Taylor must have had a great deal of knowledge.

These words came to his attention and he thanked me for taking the English engineer's "fairy tale with a grain of salt." He told me that his discovery had been the result of a number of years of methodical study. He was going to describe it in his discourse upon the occasion of his surrendering the presidency of the American Society of Mechanical Engineers, and he sent me a copy of his address. He added that it was his intention to accomplish a work more useful still in formulating new principles for the organization of work in shops, and he asked me if I would give his study a careful examination. I did this with great pleasure. I have an ardent interest in researches of this kind and I immediately bestirred myself to popularize the ideas of your illustrious colleague in France by an active propaganda. This was the beginning of a warm friendship which only death brought to a close.

I was not deceived as to the importance of Taylor's ideas. After having marched at the head of civilization for some hundreds of years, Europe must now go to America for counsel. Thanks to an unparalleled prosperity, you are graduallly becoming masters of all the world's market. In order to keep our place in the sun we must study your methods and try to assimilate them. Missions of engineers and of workmen are continually going to the United States to inform themselves regarding this industrial evolution, of which Taylor was the initiator.

In a recent article in the Saturday Evening Post, an American journalist, Garet Garrett, regarded the discoveries of these missions in a humorous vein. One sees the conveyor-belt in workshop practice as the keystone of your success, another, the bonus system, a third, the institution of shop councils, etc. The author of the article very reasonably remarked that these observations in themselves only distinguish certain effects but by no means the causes of American prosperity. He would ascribe this prosperity to the American spirit, but unfortunately he does not make clear to us in what this spirit consists, nor in what quality or degree it differs from the European mind.

I have given this problem some thought. One of the most important factors of your success is, doubtless, enthusiasm in work, but among the leaders of industry on both sides of the Atlantic, this quality appears to be about equal. If our workmen accomplish less than the American workmen, they are also paid less and their wages do not accordingly increase the cost of production. For them this only results in an inferior social situation, without its constituting a very serious obstacle to our economic development. A second essential factor in the creation of all wealth is the education, the knowledge of the engineers who direct the factories. But our schools seem to be fully equal to yours; our methods of teaching are often adopted by you. . . .

In order to advance civilization, that is, to make scientific discoveries and to utilize inventions, imagination is needed. We have never been reproached with lacking it. We can cite many French discoveries and inventions; the creation of chemistry by Lavoisier, of thermo-dynamics by Sadi Carnot, of electro-dynamics by Ampere. Likewise in the field of industry we are justified in being proud of the hydraulic cement industry created by Vicat, of the soda industry founded by Leblanc and Schloesing, of the aluminum industry, by Henri Ste. Claire Deville, of cast steel, by Martin, etc. In these industries we have as yet no competition to fear.

If labor, knowledge and imagination are marvelous tools in the production of all wealth, it is the more essential to know how to employ them. A chisel does not make a sculptor, nor a brush, an artist. Here, unfortunately, is our weak point. We lack the practical sense, wasting our labor in unproductive ways. In this matter we have much to learn from America. . . .

Taylor's great merit has been in his organizing labor on the basis of common sense. For that very reason he is at times reproached with having invented nothing, with being satisfied to accept principles which have long been common knowledge. The great difference between simple declaration of some more or less banal truths and putting them into practice, is not sufficiently taken into account. Taylor demanded that before setting to work, one should study the best means to employ. This is plain, practical sense, but it requires a great effort on the part of the industrial manager, and this so upsets him that generally he prefers not to make the effort.

All profit resulting from the lowering of costs ought to be divided, Taylor maintains, among capital, labor and the consumer. This seems perfectly logical, but each wishes to keep everything for himself, and guards his personal interests as a dog guards a bone.

Finally, Taylor enjoins upon employers and employes the policy of friendly co-operation which is indispensable for economic success, but each is suspicious of his neighbor and the class struggle prejudices the spirit of collaboration.

The putting into practice of these simple maxims of common sense has provoked a veritable industrial revolution, and America has been able to profit by it before us.

You are, Mr. President, one of the most authoritative representatives of the new mentality to which your country owes its present prosperity. In assuming the Presidency of the American Iron and Steel Institute which is comparable to our Comité des Forges, you have recommended to your colleagues that they deal with each other in a spirit of friendly co-operation, you have pledged them to the task of replacing competitive wars with agreements founded upon mutual respect between the personnel of one establishment and that of another.

This example set by the leaders has been understood and imitated by workers. In accomplishing friendly co-operation between employers and employes, you have attained higher wages than are paid in any other country, and lower costs, in spite of all competition. We must applaud this result and hope that we shall not have to wait too long before emulating you.

Permit me to remind you that seventeen years ago, when I wrote the preface to Taylor's principles of scientific organization of labor, I already foresaw this league between masters and workers as the essential condition of our industrial rehabilitation. I am flattered to find myself thus in agreement with the old president of the greatest technical society in the world and the new president of the greatest industrial syndicate.

When the ways of friendly collaboration will have been established in the heart of each of the nations of our old Europe, we may hope to see them flourish elsewhere and also to influence the relations between peoples. Upon that day civilization will have achieved a new advance without precedent in the history of the world.

Reviews

Business Cycles and Business Measurements, Studies in Quantitative Economics. By Carl Snyder, The Macmillan Company, New York, 1927, pages xiv, 326.

This is the first book since the publication of Mitchell's "Business Cycles" (1913) that eschews "business forecasting" and presents us with a series of "Studies in Quantitative Economics" that are sane, painstaking and exhaustive. The author's conception of what constitutes "Quantitative Economics" may be summarized in his own words:

"Although there have been notable brilliant forecasts of certain economic series . . ., there have been also innumerable dismal failures . . . But the importance of an intelligent analysis of the various factors of the business cycle, a measure of their intensity, an understanding of their changing relationships, and an exact quantitative expression of the measurement of economic events should lead to a much more intelligent prevision of business, and to a lessening of the severity of business cycles. Within reasonable limits we can now understand what is happening, and what has happened, and we can estimate roughly what is going to happen. And it is through measures of the type described in the preceding chapters, that much can be done toward the intelligent understanding that should eventually lead to control of the business cycle." (p. 236)

The measures of the type described in the preceding chapters are, of course, not altogether new in the field of economic statistics. Between Mitchell and Snyder have come Persons, Day, Stewart, King, Rorty and others. Prices, production, volume of trade, the securities market and numerous other "time series" have been subjected to statistical treatment—have had their secular trends and seasonal variations computed and eliminated and their "cycles" exposed to the gaze of the initiated as well as the uninitiated. In this respect the author has done no more than extend these series further back, to the 1870's, than most others, lacking his facilities, were able to do. But he has done more than that. He has brought most of these series together, compared them and reached two very important conclusions: first, that, alone, no one economic series, however basic, can be employed as a satisfactory barometer of general business conditions; second, that bank clearings, reduced to a volumetric basis through deflation by an appropriate price index, yield as satisfactory an "index of business" as the most comprehensive "index of the volume of trade," Carl Snyder's own composite of fifty-six series. And this "clearings index of business," as the author calls it, is of course the more readily available.

Not the least service rendered by the author is the inclusion of sixty-four pages of tabular matter, fifty-six charts, and for most of the series considered, the equations for their secular trends and their "seasonals."

JOSEPH M. GILLMAN[1]

Currency and Credit. By R. G. Hawtrey, Longmans, Green and Company, London, 1928, pages vii, 477. (Third Edition.)

The establishment of a sound monetary system is a matter of vital concern to every individual but progress along this line will be vacillating and slow until a much greater proportion of business men and politicians have mastered the fundamental principles which are discussed in this book.

In this third edition, Mr. Hawtrey has made a clear division between the theoretical portion (Part I) and the historical (Part II). The reasoning in Part I "has been elaborated or amended, in the light of the multifarious discussions evoked by the monetary experiences of the last few years" and matters of fact have been brought up to date.

To the great majority of people, the sole guides to an ideal system of currency and bank credit are that: (1) There shall be ample supplies of both currency and credit to meet the legitimate demands of industry and trade; (2) banks shall always be in a position to pay out currency to meet the full requirements of their demand depositors, and (3) currency of all forms shall be freely redeemable in gold, at least for foreign exchange purposes. Although all of these qualities are still fundamental to a sound monetary system, their strict observance will not prevent major cyclical and secular changes in the general price level such as we have had in the past, and which have been the cause of really stupendous economic losses and injustices, and untold social evils. As Mr. Hawtrey points out, our monetary system should be so set up and administered as to provide us with a relatively stable price level.

He does not work out in detail a plan for the accomplishment of this objective, but suggests that: "What is desirable is not the indiscriminate abandonment of the old gold reserve conventions, but the regulation of gold reserves by international agreement with the express object of preventing either a rise or fall in the wealth value of gold," (p. 106), and, "The Genoa Resolutions of 1922, combined with the credit policy adopted by the Federal Reserve Banks in America during recent years, hold out hopes of a more scientific system. A timely intervention by the central banks of the world, to check an expansion of credit before it has gone too far, will escape the need for a subsequent contraction. The price level all over the world will become relatively stable; the unemployment and financial crises associated with the fall of prices will be avoided; so will the friction arising from the continual adjustment of wages to the cyclical variations in the purchasing power of money." (p. 155).

In connection with Mr. Hawtrey's reference to the policies of our Federal Reserve Banks it should be noted that these banks have no authority under the Federal Reserve Act to conduct their operations with a view toward stabilizing the purchasing power of money, however desirable this policy may be.

Such are the main theses of this book, but the many ramifications of the subject are discussed somewhat in detail and the historical materials is of much value, although it is largely restricted to English and French monetary affairs.

For one who has never made a study of monetary economics the book will require very careful reading as the reasoning is quite involved and the difficulty of following the line of thought is further enhanced by the use of terms which are peculiar to the author's own nomenclature. Without this peculiarity the book would undoubtedly have a wider reading.

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